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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/372,531	08/11/1999	WERNER BOHNSTEDT	534P007	1518

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KEVIN S LEMACK
NIELDS LEMACK & DINGMAN
176 E MAIN STREET SUITE 8
WESTBORO, MA 01581

EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

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DATE MAILED: 05/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/372,531

Applicant(s)

BOHNSTEDT ET AL.

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-7 and 11-15 is/are rejected.
- 7) ☐ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the communication filed on 3/31/03. Applicant's arguments have been considered, but are not persuasive. Claims 1-7 and 11-15 are rejected in view of the prior art. Claim 8 is objected to as dependent on a rejected base claim. Claims 9 and 10 have been canceled. This Action is made **FINAL**, as necessitated by amendment.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Nakano et al, EP

0541124 A2.

Nakano teaches a pocket type separator for a lead acid battery (col. 5, line 1). The pocket separator is made of a synthetic resin such as polyethylene or polyvinyl chloride. Polyethylene or polyvinyl chloride may be used alone (100% of the separator). A belt-like porous sheet is obtained and the sheet is cut into a number of pieces of a predetermined length and in a rectangular shape, as shown in Fig. 3. See col. 3, lines 31-41. The pocket type separator has a plurality of parallel, vertical, projecting ribs 5 [at least one elongated rib of instant claims] provided on the middle region of the inner facing surfaces of the separator. The left and right side end portions of the separator have short, intersectant ribs 6 [studs of instant claims] that intersect both side edges of an electrode plate which is contained in the pocket type separator (col. 4, lines 2-20). This arrangement enables the battery to keep the electrode plate in good

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contact with the electrolyte, at all times, and provide consistently satisfactory performance of the battery (col. 6, lines 44-49). Note Figs. 3 and 4 that show ribs 5 are continuous.

Note the specification states on page 6 that "the studs may have any suitable shape".

Thus the claim is anticipated.

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Claims 1-4, 6, 7 and 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Bohnstedt, US 5,776,630.

Bohnstedt teaches separators for use in accumulators having longitudinal and transverse ribs. The separators are preferably provided in the form of rolls with the rib structure preventing a permanent distortion of the separators. See abstract. The separators are provided at least on one side with a pattern of longitudinal [elongated vertical rib] and transverse ribs [plurality of studs] which increases the rigidity of the separators. The separators are microporous sheets and are normally provided at least on one side with longitudinal ribs which should prevent the direct contact of the separator sheet with the positive electrode plate (ribs on inner surface of the pocket). The separators generally consist of a thermoplastic material and are formed into pockets, into which the positive or negative electrode plate is inserted. See col. 1, lines 5-23. The separators enable the charging gases to escape rapidly and in a straight line. The separators should preferably be provided in the form of rolls which are simple to handle and which can easily be further processed to form pockets (col. 1, lines 61-64). Preferred materials for the separators include polyvinyl chloride, polyethylene and polypropylene. The separators are preferably manufactured with the addition of inorganic fillers such as amorphous silicic acid (col. 2, lines 10-18). Both the longitudinal and transverse ribs are located in the center area of

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the separator. The longitudinal ribs are continuous and 2-4 longitudinal ribs are contained in the center area of the separator (see the figures). The longitudinal and transverse ribs can have both a round and an angular (truncated) cross section with equal-sided trapezoidal sections being preferred (col. 2, lines 58-60). The ribs may also form a herringbone pattern (col. 2, lines 38-47). The longitudinal and transverse ribs are integrally formed of the same material as the separator (col. 2, lines 61-67).

Note the specification states on page 6 that "the studs may have any suitable shape" including "the form of a plurality of non-continuous, broken ribs". The term "studs" refers to "elevated areas rising above the separator sheet and having the form of solid bodies".

Thus the claims are anticipated.

Regarding claim 6, Bohnstedt teaches the distance between two adjacent longitudinal or transverse ribs depends on the desired rigidity of the separator. The separator has a width of 100 mm (10 cm) and the distance between the transverse ribs is between 3 mm (0.3 cm) and 8 mm (0.8 cm). See col. 2, lines 31-57. Thus, there are about 12-33 transverse ribs [studs] across the width of the separator and about 1-3 transverse ribs (studs) per centimeter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-7 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knauer, US 5,558,952 in view of Grimes et al., US 4,396,689.

Knauer teaches a pocket separator for retaining positive or negative electrode plates in an electric storage battery. The pocket separator is formed of a porous sheet that has a plurality of continuous vertical ribs, a plurality of broken inclined ribs at the side edges, and a plurality of broken vertical ribs in the center which engage the positive or negative plate in the pocket. The porous sheet material has a plurality of differently configured ribs on its inner surfaces. See col. 1, lines 49-64. The separator sheet is constructed of a synthetic resin such as polyethylene or other suitable material which is compatible with the battery environment where it is to be used (col. 2, lines 43-46). The pocket separator may be used in a lead acid electric storage battery (col. 3, line 28-col. 4, line 3).

Knauer does not explicitly state that the pocket separator has a plurality of studs on at least one side of the separator and at least one elongated vertical rib in a center area of the at least one side.

However, Grimes teaches an electrochemical cell having a separator-spacer sheet comprising a microporous mid-portion with a plurality of projections. The projections may be pebble shaped, rod shaped or a combination of pebble-shaped and rod-shaped. See col. 5, lines 1-25. Grimes teaches in col. 2, lines 7-10 the separator-spacer is useful in the manufacture, construction and assembly of many different kinds of electrochemical cells, and should not be limited to a specific system. Figure 7c of Grimes shows a separator with a plurality of studs on at least one side and at least one elongated vertical rib in a center area of the at least one side.

Figure 7c discloses the inventive separator shown in Fig. 1 of the instant specification.

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Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Grimes teaches that a separator may have many different types of projections on a separator sheet. The projections may be in the form of pebbles, rods or a combination of both. One of skill would be motivated to use the configuration shown in Fig. 7c for the separator of Knauer because Grimes teaches projections such as pebbles, rods or a combination of both are known in the art. Furthermore, Grimes teaches the discontinuous rod configuration of Knauer in Fig. 7b. Thus, Grimes teaches both Fig. 7b and 7c are known separator configurations. Grimes teaches that Figures 7a-7d are equivalent separator configurations. Furthermore, Grimes teaches the projections allow for an expeditious flow of electrolyte. The electrolyte flows without entrapping gas bubbles about the projections. Thus, one of skill would be further motivated to use the projection configuration of Grimes for the separator of Knauer in order to improve electrolyte flow.

Allowable Subject Matter

Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the claim is directed toward a pocket battery separator comprising a microporous sheet provided with a plurality of studs in a center area of at least a first side of the sheet and at least one elongated vertical rib in the center area of at least the first side of the sheet provided with the plurality of studs. The ribs are formed of a different material than the separator sheet.

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The prior art does not teach the claimed separator sheet with a plurality of studs and at least one elongated vertical rib wherein the at least one rib is a different material than the material of the separator sheet. Bohnstedt teaches the longitudinal and transverse ribs are formed of the same material as the separator sheet.

Response to Arguments

Applicant's arguments filed 3/31/03 have been fully considered but they are not persuasive.

35 U.S.C. 112, 1st and 2nd paragraph

All 35 U.S.C. 112 rejections have been withdrawn. Note Applicant's presumption that claim 13 should have been rejected is correct. Specifically, on page 3, line 9, of the Action mailed 1/2/03 "Claim 9 further recites" should have stated "Claim 13 recites".

Nakano et al.

Applicant's arguments regarding Nakano are persuasive. However, claim 15 has not been amended to recite the plurality of studs are provided in the center area of the separator sheet. The rejections of claims 1-3, 5, 7, 8 and 11-14 as being anticipated by, or obvious in view of, Nakano have been withdrawn.

Knauer in view of Grimes et al.

Applicant argues "the object of Knauer [is] to avoid the disadvantages associated with vertical ribs, such as misalignment of electrode plates and slow production" and cites col. 1, lines 27-42. However, this section of Knauer merely discusses the prior art before the invention of Knauer. Thus, the cited section of the patent does not teach "the object" of Knauer.

Furthermore, this section recites a "pocket with a plurality of vertical ribs". Knauer does not

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teach against a separator having protuberances in the shape of studs or a combination of ribs and studs. Applicant further states Knauer suggests providing “the separator sheet with a plurality of broken vertical ribs in the center area” and cites col. 1, lines 53-57. This section states the pocket separator is formed of a porous sheet that has a plurality of continuous vertical ribs, a plurality of broken inclined ribs at the side edges and a plurality of broken vertical ribs in the center which engage the electrode in the pocket. It is important to note the Knauer does not specify where the continuous vertical ribs are located in this section, but indicates the broken inclined ribs are at the side edges and the broken vertical ribs are in the center of the separator. Furthermore, Knauer teaches the pocket separator is formed of a porous sheet material that has a plurality of differently configured ribs (col. 1, lines 59-64). Thus, Knauer suggests the continuous vertical ribs may be located anywhere on the separator sheet.

Applicant argues “in view of Knauer’s intention to avoid the disadvantages associated with vertical ribs which are arranged in the middle area of the separator sheet, one skilled in the art would not have been motivated to modify the separators of Knauer by providing vertical ribs in the center area of the separators as in Grimes”. It is important to note that the disadvantage of misalignment discussed by Knauer is only applicable when the negative electrode plate is inserted into the pocket separator (col. 1, lines 37-42 and col. 3, lines 2-5). Furthermore, Grimes teaches the separator-spacer designs of Figures 7a-7d result in a reduction in gas entrapment (col. 1, lines 58-61).

Applicant admits that one of skill in the art would have been motivated to use the separator designs of Grimes for the separator of Knauer (page 5, lines 14-18). Specifically, Applicant states one of skill would have been motivated to use the separator shown in Figure 7b

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of Grimes (greatly resembles the separator design suggested by Knauer) for the separator of Knauer. Grimes teaches the separator configurations shown in Figures 7a-7d are equivalent in the art for separator designs. Since one of skill would have been motivated by use the separator design of Figure 7b of Grimes for the separator design of Knauer, then one of skill would also have been motivated to use the separator design of Figure 7c of Grimes for the separator design of Knauer.

Applicant argues Grimes is concerned with a totally different type of battery than Knauer. However, Grimes teaches the construction and assembly of many different kinds of electrochemical cells, and Grimes should be interpreted as not being limited to a specific system (col. 2, lines 7-10). Furthermore, Grimes, at the least, suggests the separators may be used in lead acid batteries. Grimes teaches the separators are “of prime interest to the automotive and battery industries” (col. 1, lines 41-45). One of skill in the art would have known that lead acid batteries are used in the automotive industry. Claims 13 does not recite a lead acid battery.

* Note at least claims 1 and 15 do not recite at least one continuous rib, but recites “at least one elongated vertical rib”. According to the description of “studs” and “ribs” in the specification, it appears the “at least one elongated rib” and the “plurality of studs” of claims 1 and 15 may have the same shape.

Conclusion


Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

May 6, 2003


Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700